

THE CLAIMS

What is claimed:

5 1. A bone plate comprising:
 an upper surface;
 a bone-contacting surface; and
 a plurality of holes extending through the upper and bone-contacting surfaces,
the holes dimensioned and configured for receiving bone screws;
10 wherein at least one of the holes includes a protrusion disposed on the bone-
contacting surface and at least partially surrounding the hole.

15 2. The bone plate of claim 1, wherein the bone plate defines a nominal plate
thickness in regions between the holes, and the protrusion defines an increased plate
thickness that is greater than the nominal plate thickness.

20 3. The bone plate of claim 2, wherein the increased plate thickness is about 1.5 to
about 2 times greater than the nominal plate thickness.

25 4. The bone plate of claim 3, wherein the nominal plate thickness is about 1 mm
and the protrusion extends from the bone-contacting surface by about 0.8 mm.

30 5. The bone plate of claim 2, wherein the protrusion is substantially annular.

35 6. The bone plate of claim 2, wherein the protrusion minimizes contact between
the bone-contacting surface and a bone.

40 7. The bone plate of claim 1, wherein the hole defines a central axis, and the
protrusion tapers radially inward with respect to the central axis in a direction from the upper
45 surface toward the bone-contacting surface.

50 8. The bone plate of claim 7, wherein an indentation is provided in the upper
surface opposite from the protrusion, and the indentation is substantially concentric with the
protrusion.

9. The bone plate of claim 7, wherein the protrusion tapers radially inward, and defines a taper angle of about 40° to about 100°.

5 10. The bone plate of claim 1, wherein the hole is provided with an internal thread for engaging a threaded screw-head.

11. The bone plate of claim 10, wherein the hole defines a central axis, and the internal thread tapers radially inward with respect to the central axis in a direction from the upper surface toward the bone-contacting surface.

12. The bone plate of claim 11, wherein the internal thread defines a taper angle of about 10° to about 30°.

13. The bone plate of claim 11, further comprising a bone screw having a screw-head with an external thread disposed on the screw-head, wherein the hole defines an internal thread taper angle, and the screw-head defines an external thread taper angle that is substantially equal to the internal thread taper angle.

14. The bone plate of claim 13, wherein the internal thread taper angle and the external thread taper angle are about 20°.

15. The bone plate of claim 1, wherein the bone plate defines a longitudinal axis, and the plurality of holes are spaced apart substantially along the longitudinal axis.

25 16. A bone plate comprising:
an upper surface;
a bone-contacting surface; and
a plurality of threaded holes extending through the upper and bone-contacting surfaces, the threaded holes configured and dimensioned for engaging threaded screw-heads;
and

30 a tapered flange formed at least partially around one of the holes and extending from the bone-contacting surface, the tapered flange defining a corresponding tapered recess in the upper surface;

35 wherein the bone plate defines a nominal plate thickness in regions between the holes, and the protrusion defines an increased plate thickness that is greater than the nominal plate thickness.

17. The bone plate of claim 16, wherein:
the hole defines a central axis;
the tapered flange tapers radially inward with respect to the central axis in a direction from the upper surface toward the bone-contacting surface; and
the tapered flange defines a flange taper angle of about 40° to about 100°.

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18. The bone plate of claim 17, wherein the threaded hole tapers radially inward with respect to the central axis in a direction from the upper surface toward the bone-contacting surface, and the threaded hole defines a threaded hole taper angle of about 10° to about 30°.

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19. The bone plate of claim 18, wherein the tapered flange is substantially annular.

20. A bone plate system comprising:

a bone plate including:

an upper surface;

a bone-contacting surface;

a plurality of tapered holes extending through the upper and bone-contacting surfaces, the holes having an internal thread disposed thereon; and

20 an annular protrusion formed at least partially around one of the holes and extending from the bone-contacting surface, the protrusion being substantially concentric with the hole; and

25 a bone screw having a tapered screw-head with an external thread disposed thereon for engaging the internal thread;

wherein the internal thread defines an internal thread taper angle, and the external thread defines an external thread taper angle that is substantially equal to the internal thread taper angle.

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30 21. The bone plate system of claim 21, wherein the bone plate defines a nominal plate thickness in regions between the holes, and the protrusion defines an increased plate thickness that is greater than the nominal plate thickness.

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22. The bone plate system of claim 21, wherein the annular protrusion tapers radially inward in a direction from the upper surface toward the bone-contacting surface.

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23. The bone plate system of claim 22, wherein the annular protrusion defines a recess in the upper surface, and the recess tapers radially inward in a direction from the upper surface toward the bone-contacting surface.

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